

MISSOURI CONSERVATIONIST

VOLUME 80, ISSUE 2, FEBRUARY 2019
SERVING NATURE & YOU



NATURE

is

Healthy



Feeling tired? Spending just 20 minutes outside can give your **brain an energy boost** comparable to a cup of coffee.



Spending time in nature, conservation areas, woods, backyards, and urban parks may **ease stress levels**.



Getting away from busy schedules allows people to **connect with nature and themselves** in a way that brings calm and a sense of well-being.



Taking a nature walk may **increase attention spans** and creative problem-solving skills by as much as 50 percent.



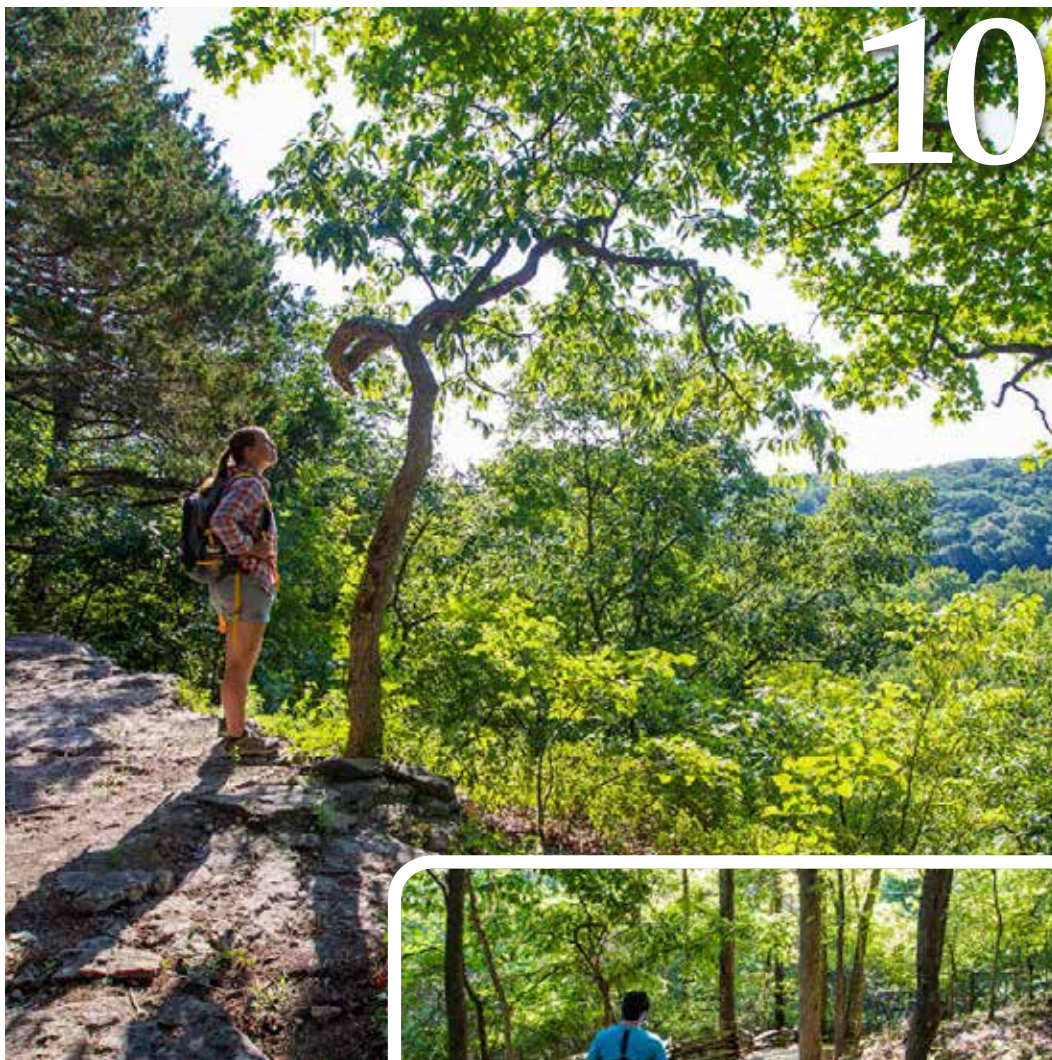
Exposure to nature contributes to **physical well-being**, reducing blood pressure, heart rate, muscle tension, and the production of stress hormones.

Get healthy in nature this year. Visit mdc.mo.gov/places-go or download the free MO Outdoors app for ideas on where to go near you.



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Spring beauty

MISSOURI
CONSERVATIONIST



ON THE COVER

Gray squirrel

📷 **NOPPADOL PAOTHONG**

800mm lens +1.4 teleconverter,
f/11, 1/500 sec, ISO 800

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SWAMP RABBITS

The December article on swamp rabbits [*Nature Lab*, Page 4] was informative and interesting. We used to call them muskrats. When simmered in brown gravy, they are delicious.

John Sutton
Cedar Hill

COOKIE BAKE

Your cookie recipe for Zimmerschied (German Brown Sugar Cookies) brought back happy memories [December, Page 8]. I am 85 years old, and that was our favorite cookie as children. I still make them every Christmas. After the dough was chilled, my siblings and I would cut chunks off and eat it raw. Thanks for the magazine. After I read it, I give it to the nursing home.

Geraline Ellerbrake Gerald

CONSERVATIONIST KUDOS

I have been remiss — for only 60 or so years — for not writing and telling you what a great magazine the *Missouri Conservationist* is! It just took the white-tailed buck on the November issue to spur me to finally email and tell you how much we enjoy your publication.

I inherited the enjoyment of reading your monthly issues from my father, Leighton (Mac) McCormick, professor of forestry at Mizzou and extension forester for the state since the late 1930s. He introduced me to duck hunting on the Missouri River, and the *Conservationist* went hand in hand with me loving and enjoying that activity.

Since graduating from the School of Journalism in 1969, I've been a regular and dedicated subscriber. And, just as my dad did for me, I passed along the enjoyment of reading the *Missouri Conservationist* to our daughter, Kate. She now lives and works in Columbus, Ohio, and talked me into getting her a subscription, which she reads faithfully. In fact, being an art major, she creates beautiful and colorful renditions of your covers.

My sincere thanks for doing what you do so well.

Leighton (Leigh) McCormick Webster Groves

Love your magazine. Look forward to its arrival and read it cover to cover. Accolades to all.

Steve Israelite via email



My wife and I thoroughly enjoy the *Missouri Conservationist*. We especially enjoy articles about the elk at Peck Ranch and articles about the **Mingo National Wildlife Refuge**. Keep up the good work!

George and Rayetta Bates Jasper

PROTECTING WILDLIFE

Thank you for your efforts to stop the poaching of animals. Not sure why people choose to hunt illegally, but I am grateful you make them accountable for their theft and harm to hunters that follow the rules.

People are in need of food and some can't afford to buy it. Hunters help those in need, and they realize that you can't overhunt if you want animals to survive for legal hunting.

Thank you for your magazine, the articles, and great photos. I'm not a hunter, but I am a fan of your awesome informative magazine. Keep up the good work!

Judy Sepac Ballwin

If you witness or suspect a wildlife violation, report it to your local conservation agent or call the toll-free Operation Game Thief number — 1-800-392-1111 — which is staffed 24 hours a day. You may remain anonymous, and you may ask to be considered for a reward, if you wish. For more information on Operation Game Thief, visit short.mdc.mo.gov/ZoB.

—THE EDITORS

SWAMP RABBIT: JIM RATHER; MINGO WETLAND: NOPPADOL PAOTIHONG

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Have a Question for a Commissioner?

Send a note using our online contact form at mdc.mo.gov/commissioners.



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Share your photos on Flickr at
flickr.com/groups/mdcreaderphotos-2019,
email Readerphoto@mdc.mo.gov,
or include the hashtag #mdcdiscovernature
on your Instagram photos.



1

1 | Red-eared
sliders emerging
from winter by
Mike Conley,
via Flickr

2 | Winter
lichens and moss
by **ten8e**,
via Instagram

3 | Eyed click
beetle found in
firewood by **Yens
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2



3

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Up Front

with Sara Parker Pauley

✱ I'm a sucker for New Year's resolutions. Perhaps it's just my personality, but I love the idea of a do-over — wiping the slate clean and trying to do better this time around. Near the top of my list, which is also on the list of many others, is getting more daily exercise and time outdoors.

However, not long after January started, I was beginning my workday particularly early and thought about putting off my walk until later. "No," said my newly resolution-committed voice. "Just 30 minutes. Go!" That morning, I saw a beautiful pre-dawn sky full of stars and heard deer blowing in the fields nearby. I saw an opossum scurrying across the road and witnessed the day's first hint of light, reminding me of author Eugene Peterson's definition of sunrise — "when the spontaneous and the certain arrive at the same time."

What is happening between the mind and body connection that so invigorates us with a walk outdoors? *Nature*, a science journal, shared research about a zebrafish's brain and how, as soon it begins to swim and become active, its brain lights up, which we know to be true for all species. We need activity and when you add the outdoors to the equation, you have enhanced problem-solving capacity to boot. There are tons of other health benefits, both mental and physical, which you can read all about on Page 20.

In talking to the Missouri Department of Health & Senior Services Director Dr. Randall Williams recently, he called his exercise time outdoors his sanctuary. I couldn't agree more. And the research confirms what we all intuitively know ... nature is good medicine.

Sara Parker Pauley

SARA PARKER PAULEY, DIRECTOR
SARA.PAULEY@MDC.MO.GOV

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Printed with soy ink



mdc.mo.gov 3

Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

WILDLIFE RESTORATION

Pallid Sturgeon Sampling

✱ “It’s like fishing for dinosaurs,” Thomas Huffmon said. “They’re old!”

Huffmon, an MDC fisheries management biologist, is talking about helping Missouri River Field Station (MORFS) staff, Juju Wellemeyer and Adam McDaniel, sample pallid sturgeon. This 70 million-year-old fish can grow 6 feet long and weigh 85 pounds. It’s also federally endangered.

“We conduct year-round sampling, but springtime broodstock collection is a special part of a coordinated effort to boost pallid sturgeon numbers,” said Wellemeyer.

McDaniel agreed. “We depend on volunteers like Thomas to help us pull trotlines, check for hatchery ID tags, collect genetic material, and record data.”

Kasey Whiteman, MORFS’s supervisor, lists some of the reasons why the pallid sturgeon is endangered. “They’re missing vital habitat and open migration. They require a lot of river miles to complete their life

MDC’s Thomas Huffmon and Carol Lutes check a pallid sturgeon for hatchery marks.



The Missouri River Field Station leads MDC’s efforts to restore the state’s federally endangered pallid sturgeon population in the Missouri River

cycle,” he said.

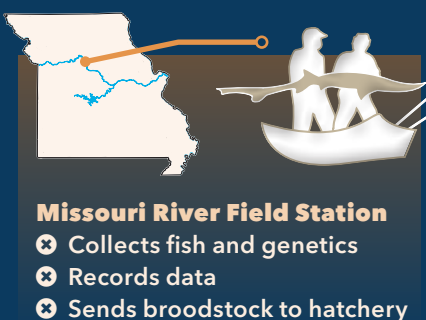
In addition to changes in the Missouri River’s flows, several hydroelectric dams from Montana to Nebraska thwart the fish’s life cycle. Simply put, even if the pallid sturgeon reaches breeding age in seven to 14 years, a shortened and dammed river disrupts reproduction and recruitment.

MORFS’s efforts to help restore the pallid sturgeon’s population is part of a larger, multiagency plan funded by the U.S. Army Corps of Engineers.

“We provide information and expertise,” Whiteman said. This includes data from annual sampling efforts as well as broodstock for federal hatcheries.

Whiteman asks anglers who accidentally catch a pallid sturgeon to take a quick photo of the fish and release it unharmed immediately. Email photos to Kasey.Whiteman@mdc.mo.gov.

Pallid Sturgeon Sampling at a Glance



Monitoring/Stocking Cycle

Federal Hatchery

- ✱ Spawns broodstock and returns to river
- ✱ Rears fingerlings 1-2 years
- ✱ Tags fingerlings and releases in river

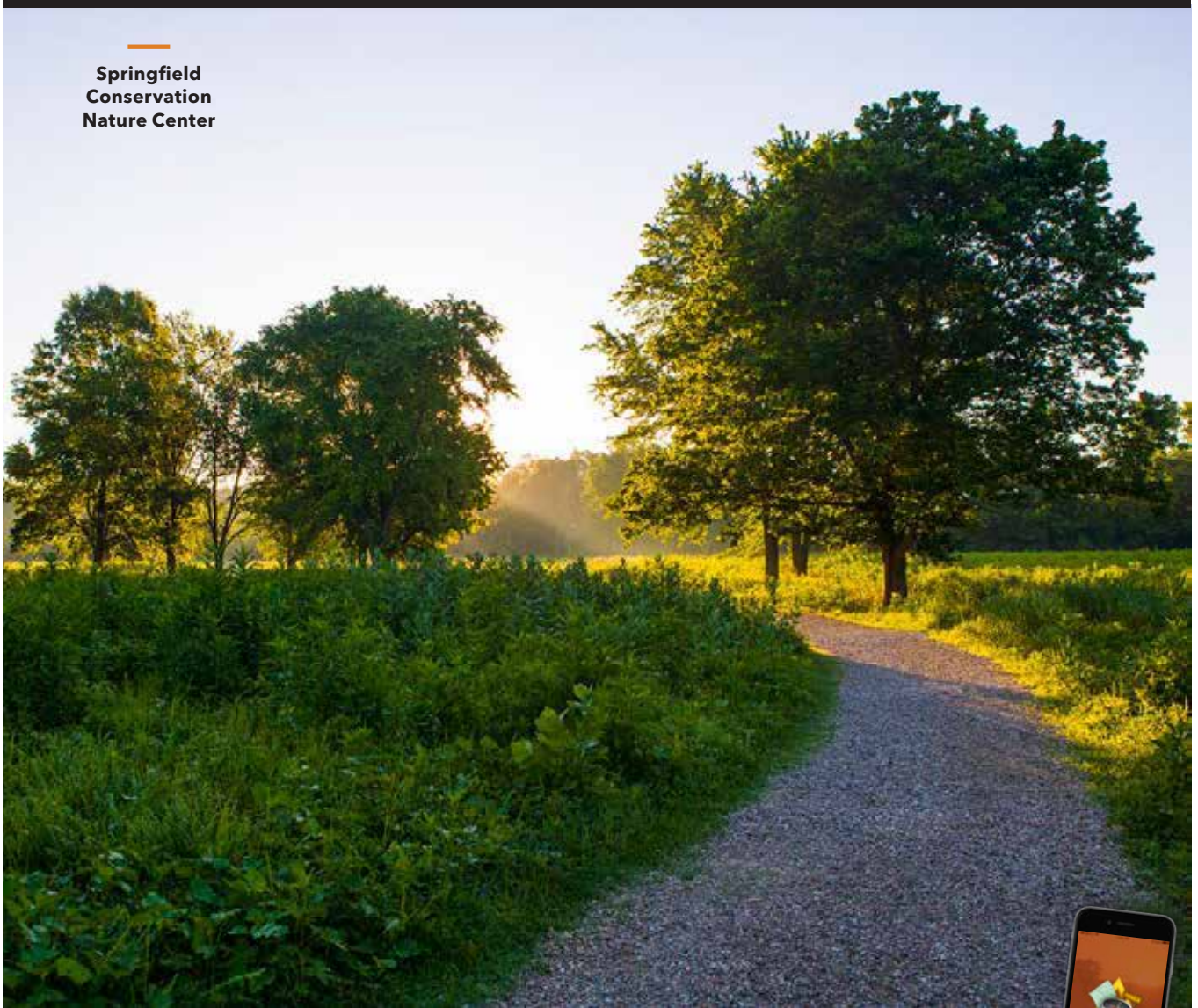


NOPPADOI, PIOTKHONG: PALLID STURGEON; LANCE MERRY

In Brief

News and updates from MDC

Springfield
Conservation
Nature Center



MDC LAUNCHES NEW APP

DISCOVER
NATURE WITH
MO OUTDOORS

➔ Enjoying outdoor activities just got a little easier thanks to MO Outdoors, MDC's latest free app. MO Outdoors users can quickly find MDC outdoor offerings close to home, work, or even while traveling based on preferred activities.

MO Outdoors can help users find conservation areas, fishing accesses, hiking trails, shooting ranges, and nature centers around the state based on specified outdoor activities, including bird-watching, camping, fishing, hiking, hunting, or shooting. Users can also mark favorite locations to find them again quickly during future searches.

MO Outdoors also connects users to area regulations and season information, hours of operation, images, area closings, and interactive maps of area boundaries and features. The map function displays features such as parking lots, boat ramps, and wildlife viewing areas, and allows users to easily navigate to the features using their device's GPS. Users can also download maps for offline use.

MO Outdoors is available for download through Google Play for Android devices or the App Store for Apple devices.



ANNUAL TROUT OPENER MARCH 1

Catch-and-keep trout fishing season opens March 1 at Bennett Spring State Park near Lebanon, Montauk State Park near Licking, Roaring River State Park near Cassville, and Maramec Spring Park near St. James. The season runs through Oct. 31.

MDC operates trout hatcheries at all four parks. To help predict angler turnout on opening day, hatchery staff rely on permit records going back more than 80 years.

Montauk, Bennett Spring, and Roaring River hatchery staff expect crowds of about 2,000 anglers at each location and Maramec Spring staff are planning for a crowd of about 1,000. Based on these predictions, hatchery staff will stock three rainbow trout per expected angler on opening day for a total of more than 21,000 fish, averaging a foot in length. The hatcheries will also stock a mix of lunkers, ranging from 3 to 10 pounds.

Trout anglers will need a daily trout tag to fish in Missouri's trout parks. Daily trout tags can only be purchased at each of the four trout parks. Missouri residents 16 through 64 and nonresidents 16 and older need a fishing permit in addition to the daily tag.

Trout hatcheries are just one way that conservation pays in Missouri. MDC staff stock more than 800,000 trout annually at the state's four trout parks and approximately 1.5 million trout annually statewide. Trout anglers spend more than \$100 million each year in the Show-Me State, which generates more than \$180 million in business activity, supports more than 2,300 jobs, and creates more than \$70 million in wages. About 30 percent of Missouri trout anglers come from other states, so a substantial portion of trout fishing expenditures is new money for the state's economy.

For more information on trout fishing in Missouri, visit short.mdc.mo.gov/Zou.

Attention Trout Anglers

To prevent the spread of didymo or "rock snot," an invasive algae, the use of shoes, boots, or waders with porous soles of felt, matted, or woven fibrous material is prohibited at all trout parks, trout streams, Lake Taneycomo, and buffer areas. For more information, visit short.mdc.mo.gov/Z3K.



Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q. I saw a coyote walking across our cul-de-sac and down the neighbor's driveway. I spotted him in the open at midday. Does this indicate anything about the animal's health?

➔ Coyotes are mostly nocturnal, but occasionally active in the daytime. They show a peak of activity at sunset and in the early evening, with a minor peak at daybreak. It's possible the cold weather has this animal out in search of more calories. So, it is possible to see healthy coyotes active at midday.

In areas where coyotes are hunted or trapped, they are wary of human beings. In urban areas, where they are more likely to associate people with an easy and dependable source of food, they can become bold. They may frequent backyards, porches, or come right up to the door of a house if food is regularly present. This behavior

and the lack of fear of humans is where most of the conflict lies when it comes to urban coyotes. Waving your arms and making noise to scare them is an acceptable way to ensure they maintain a healthy fear of humans.



Coyote

We always recommend that people avoid feeding wild animals, either on purpose or inadvertently. It's best to make sure any pet food or garbage is kept out of reach.

Historically, these animals lived in open grasslands and prairies, but they have flourished in the habitats created by humans. In urban and suburban areas, many people enjoy their encounters with coyotes and, by taking a few common-sense precautions, avoid the negative impacts coyotes might otherwise cause. For more information about urban coyotes, visit short.mdc.mo.gov/ZpB.

Q. I have fond memories of listening to whip-poor-wills in the evening, but it's been years since I've heard their calls. Have their numbers decreased? Is there anything I can do to attract them?

➔ While nationwide breeding data are scarce for many nocturnal birds, from what surveys we do have, the eastern whip-poor-will is declining over much of its range. The reasons are most likely habitat loss, degradation, and widespread land-use change.

In Missouri, whip-poor-wills breed in upland, deciduous forests with little



Eastern whip-poor-will

or no underbrush, close to open areas. They prefer forests and woodlands filled with pines, oaks, and hickories and they seem to avoid large tracts of uninterrupted, densely canopied forests. Females lay their eggs directly on the leaf litter of the forest floor, typically in the shade of a small shrub.

Much of the habitat that was once favorable for whip-poor-wills has either been lost outright or altered by human encroachment. What good habitat is left is in smaller chunks than before, making it more vulnerable to human-related

impacts. It's also possible feral cats have had an impact on this species' nesting success, but more research is needed.

Because whip-poor-wills are insectivores that don't nest in cavities, their numbers can't be improved with feeding stations or birdhouses. Scientists are still working to learn more about why the population is declining. You can help efforts to monitor whip-poor-wills and Chuck-will's-widows by participating in the nationwide Nightjar Survey Network. For more information, visit nightjars.org.

AGENT ADVICE

from

Jeff Scott

BOLLINGER COUNTY
CONSERVATION AGENT

A Light Goose Conservation Order goes into effect Feb. 7 through April 30. What does this mean for waterfowl hunters? More opportunities to harvest snow, blue, and Ross's geese. During this time period, there are no bag limits and hunters can use electronic calls and unplugged shotguns. In addition, a Conservation Order Permit is all that is required during this season. The U.S. Fish and Wildlife Service implemented the Conservation Order to reduce the numbers of snow, blue, and Ross's geese due to population increases and the resulting damage to habitat and nesting ground. Remember, always get permission when hunting on private property and never shoot from a road or vehicle.



What IS it?

Can you guess this month's natural wonder?

The answer is on
Page 9.





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VENISON QUESADILLAS

Most venison cuts can be prepared like beef. In this recipe, we take your venison south of the border for a festive twist on traditional quesadillas.

Serves 4–6

QUESADILLAS:

1 pound venison roast or cutlets, sliced in thin strips
¼ cup lime juice
2 cloves garlic
½ teaspoon cumin salt and pepper
1 tablespoon Worcestershire sauce
1 medium onion, diced
2 tablespoons olive oil
1 sweet pepper, diced
4–6 large flour tortillas
¼ cup fresh cilantro
1 can black beans, rinsed
1 tomato, diced
1 cup corn-on-the-cob (cut off)

½ pound grated cheese (pepper or Monterey jack)

FRESH FRUIT CHIPOTLE:

1 medium clove garlic
2 tablespoons fresh cilantro
2 tablespoons lime juice
¼ teaspoon salt
¼ teaspoon cumin
1 teaspoon chipotle pepper (or more to taste)
1½ cup fresh fruit (pineapple, apple, strawberry, kiwi, or mango)

MIX marinade ingredients and add venison strips. Let marinate for 30 minutes or longer.

PLACE all chipotle ingredients in food processor and chop.

SAUTE venison in a small amount of oil until nearly done, then add onion and pepper. Cook slightly. Set aside to build quesadillas.

ADD a small amount of oil to a skillet or griddle and warm. Place cheese on half of tortilla shell and add some of the meat mixture. Top with fresh cilantro and other favorites such as tomato, black beans, and corn. Fold over and grill on both sides until golden and warmed through. Serve with fresh fruit chipotle.





DEER AND TURKEY HUNTING DATES FOR UPCOMING SEASONS

2019 Spring and Fall Turkey Hunting Dates

- Spring Youth Portion: April 6–7
- Regular Spring Season: April 15–May 5
- Fall Firearms Season: Oct. 1–31

2019–2020 Archery Deer and Turkey Hunting Dates

- Sept. 15–Nov. 15
- Nov. 27, 2019–Jan. 15, 2020

2019–2020 Firearms Deer Hunting Dates

- Early Youth Portion: Nov. 2–3
- November Portion: Nov. 16–26
- Late Youth Portion: Nov. 29–Dec. 1
- Antlerless Portion: Dec. 6–8
- Alternative Methods Portion: Dec. 28, 2019–Jan. 7, 2020

Details on hunting regulations, harvest limits, allowed methods, required permits, and other related information will be available in MDC's *2019 Spring Turkey Hunting Regulations and Information* and *2019 Fall Deer & Turkey Hunting Regulations and Information* booklets. Both will be available where permits are sold prior to the related seasons.

Learn more about deer and turkey hunting in Missouri at huntfish.mdc.mo.gov.

Renew Annual Hunting and Fishing Permits

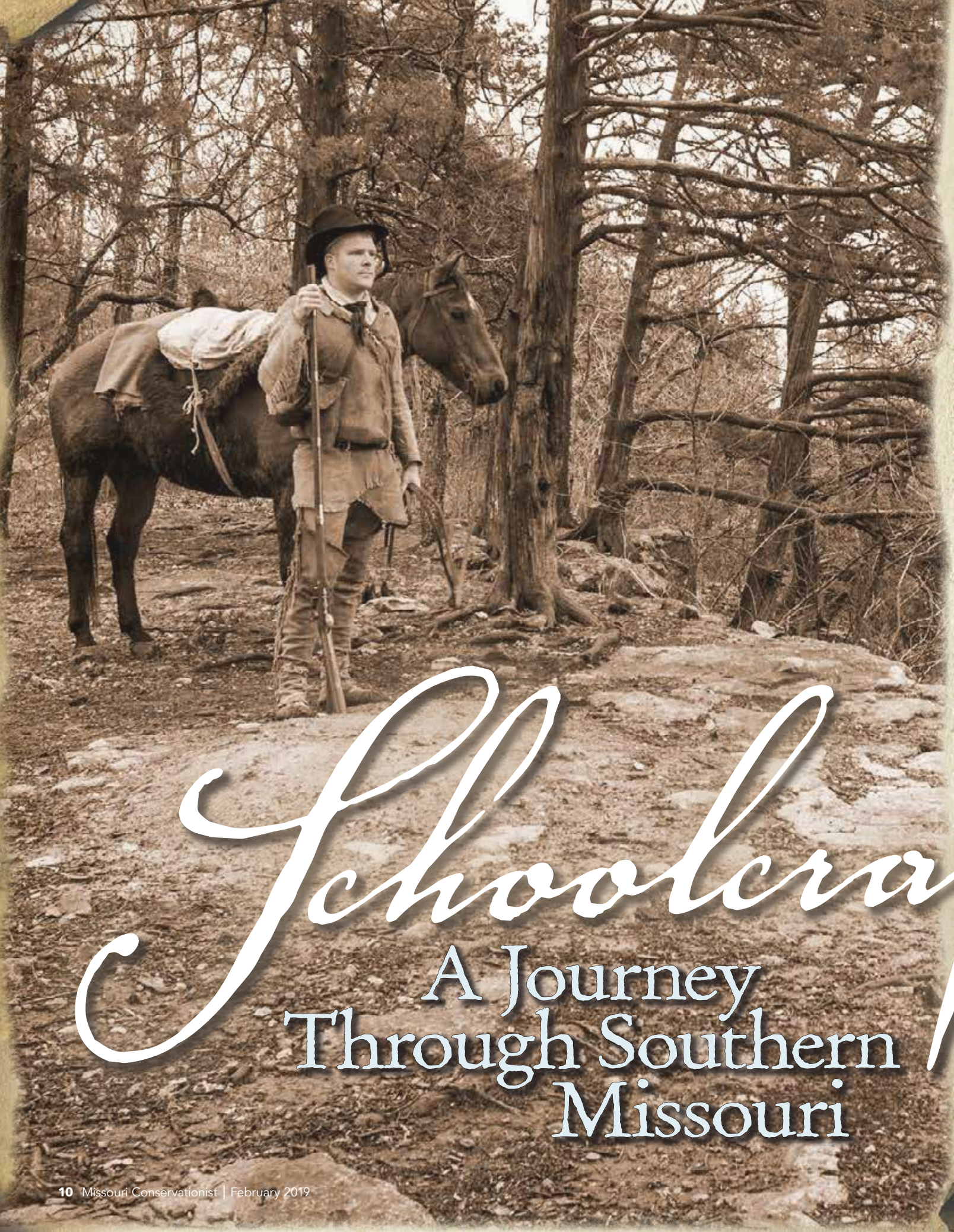
MDC reminds Missouri hunters and anglers that annual permits expire at the end of February, including 2018 permits for small game, fishing, trout fishing, and combination hunting and fishing.

Buy Missouri hunting and fishing permits from vendors across the state, online at mdc.mo.gov/buypermits, or through MDC's free mobile apps, MO Hunting and MO Fishing, available for download through Google Play for Android devices or the App Store for Apple devices.

WHAT IS IT? OZARK WITCH-HAZEL

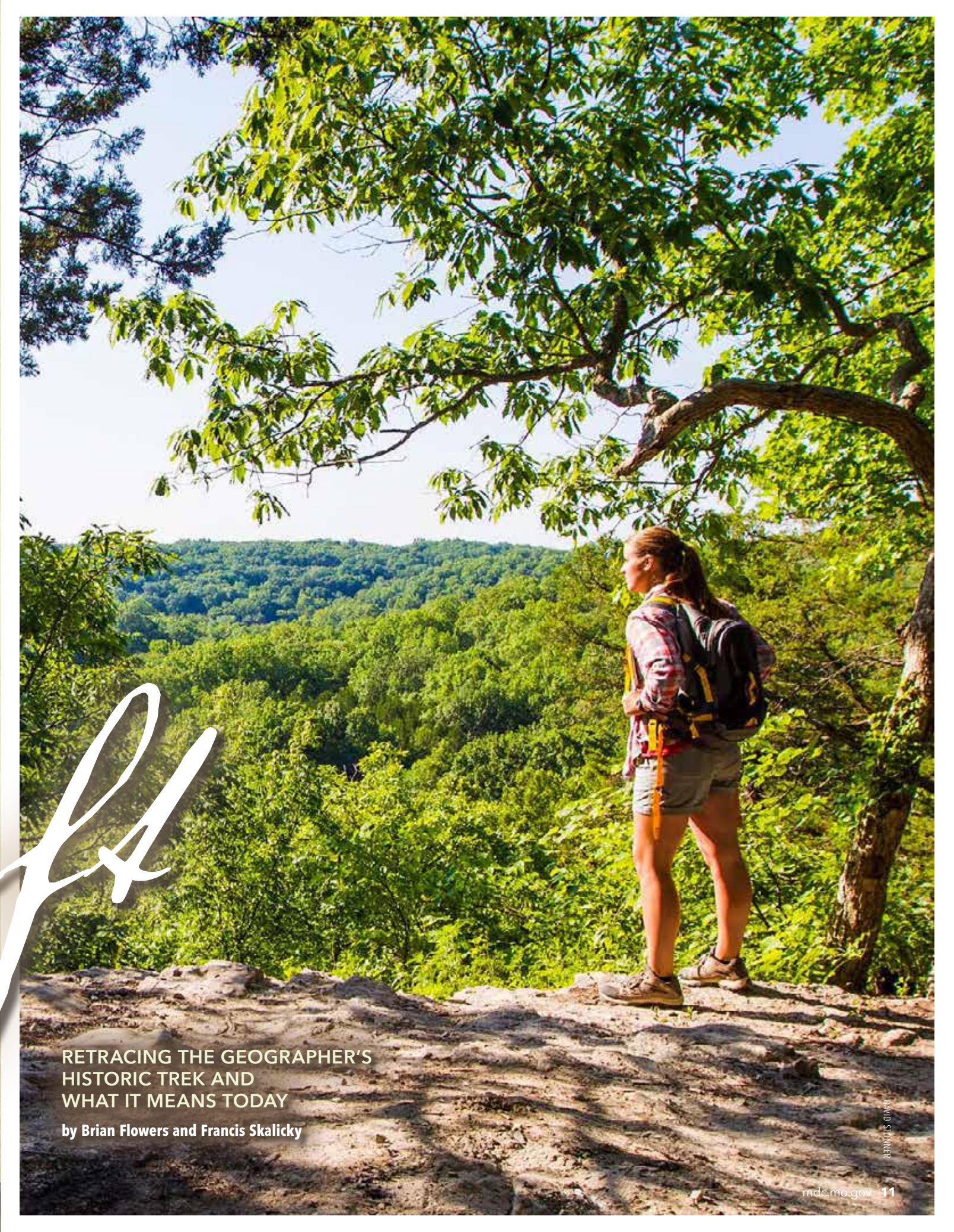
Ozark witch-hazel (*Hamamelis vernalis*) is a shrub with fragrant flowers that can bloom as early as January, even if there is still snow on the ground. Witch-hazel is used for landscaping and erosion prevention. In addition, it is a favorite amongst wildlife. Deer eat the shoots and leaves while turkey and grouse eat the seeds and flowers. Beaver, squirrels, and rabbits enjoy the bark.





Schoolcraft

A Journey
Through Southern
Missouri



RETRACING THE GEOGRAPHER'S
HISTORIC TREK AND
WHAT IT MEANS TODAY

by Brian Flowers and Francis Skalicky

DAVID STAMMER



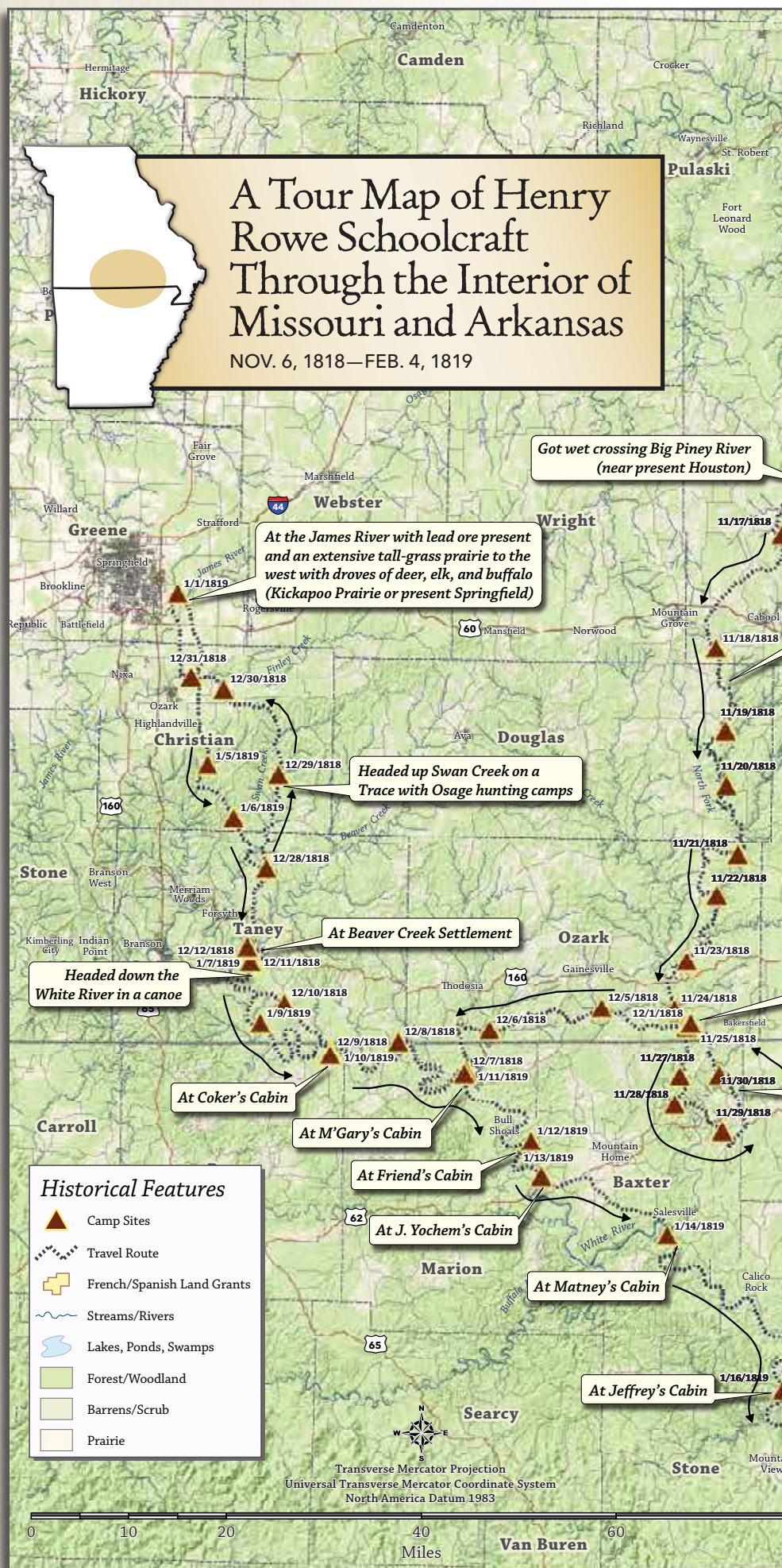
"I begin my tour where other travelers have ended theirs, on the confines of the wilderness."

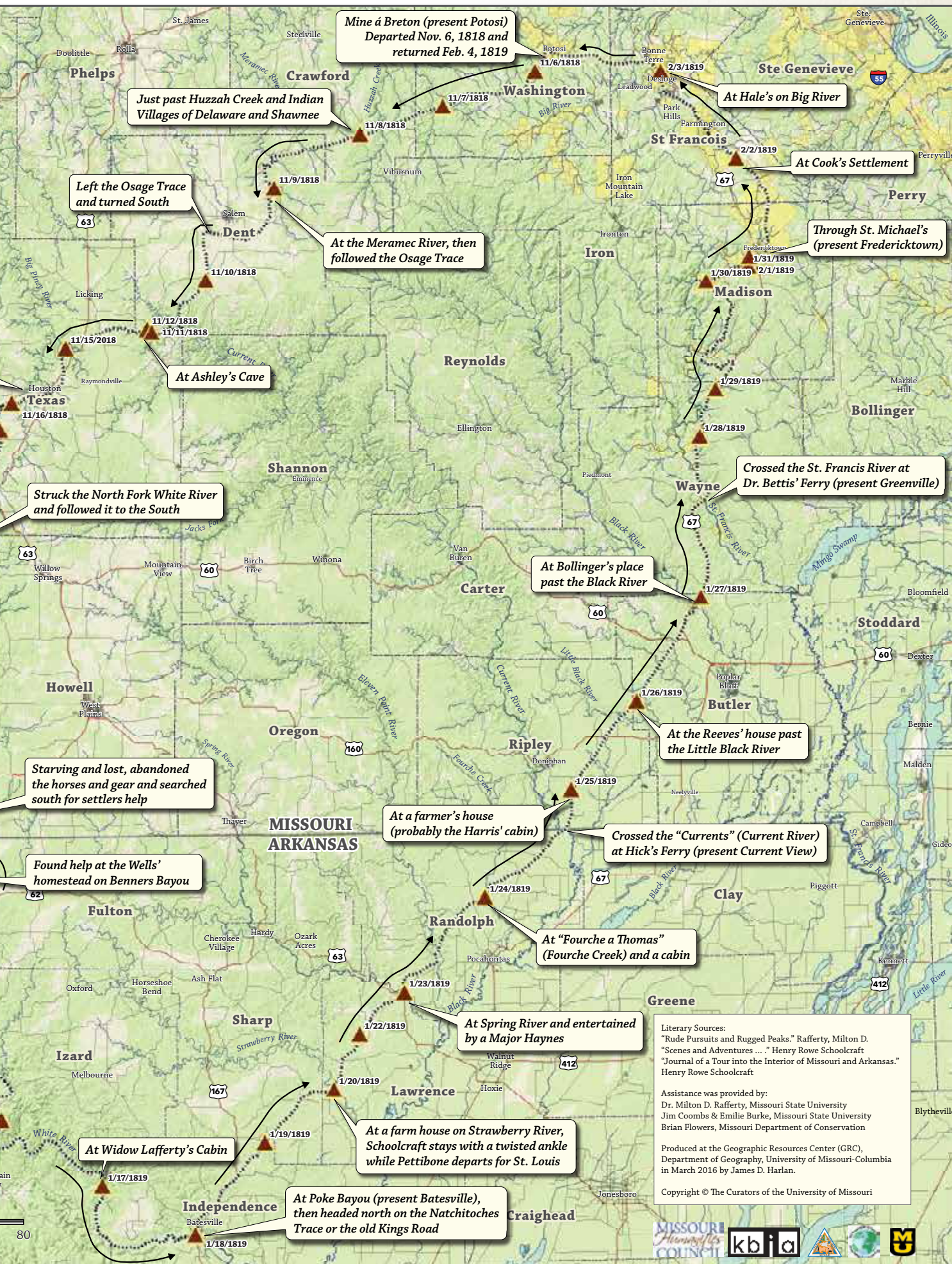
Two centuries after they were written, Henry Rowe Schoolcraft's words still beckon outdoor enthusiasts to southern Missouri.

On Nov. 6, 1818, Schoolcraft, his friend Levi Pettibone, and one pack horse left Mine á Breton (present-day Potosi) in the Missouri Territory. They were on a quest to learn more about the mining potential of lead deposits on the James River in the southwest part of the territory.

What followed was a 900-mile, three-month odyssey into what is now southern Missouri and northern Arkansas. Schoolcraft found lead near present-day Springfield, but a more valuable resource he provided was the detailed journal he kept of his travels. Published in 1821 under the nondescript title *Journal of a Tour into the Interior of Missouri and Arkansas in 1818 and 1819*, this was the earliest description of the interior Ozarks by a skilled observer. Schoolcraft's notes on wildlife, vegetation, and landforms provide baseline knowledge about what this part of Missouri looked like two centuries ago.

Today, Schoolcraft's entries entice hikers, hunters, floaters, and anglers who want to envision what the pre-settlement Ozarks were like.





Literary Sources:
 "Rude Pursuits and Rugged Peaks." Rafferty, Milton D.
 "Scenes and Adventures" Henry Rowe Schoolcraft
 "Journal of a Tour into the Interior of Missouri and Arkansas."
 Henry Rowe Schoolcraft

Assistance was provided by:
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 Brian Flowers, Missouri Department of Conservation

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Potosi to the Huzzah

Your journey, just like Schoolcraft's, begins in Washington County at Potosi — although you'll likely travel by motorized vehicle instead of by foot with a packhorse in tow. Head west on Missouri Highway 8, cross Courtois and Huzzah creeks. One of Schoolcraft's early campsites (Nov. 8, 1818) was near MDC's Huzzah Conservation Area in Crawford County. This 6,225-acre area is known for floating, fishing, hunting, and hiking opportunities, both on MDC-managed trails and on a stretch of the Ozark Trail, managed by the Ozark Trail Association, that crosses the site.

Schoolcraft's general route goes through Steelville, south on Missouri Highway 19 into Dent County and near a unique natural feature — glades. Glades are hot, dry openings within woodlands that are noted for shallow and/or poor soils and exposed bedrock.

"Glades are beautiful communities that support a diversity of sun-loving plants and animals," said John George, MDC's wildlife supervisor for the central region. "Despite their beauty they can be best described as hard rocky deserts to those who were working to carve out a living in the Ozarks."

Big Glade Natural Area, which lies within MDC's 13,310-acre Indian Trail Conservation Area in Dent County, is one place to visit these unique habitats. Visitors in summer may see colorful wildflowers such as white and purple prairie clover and pale purple coneflower.



Schoolcraft started his journey on Nov. 6, 1818, in Potosi, an area known for its lead production and as the mines of Missouri.



Missouri glades are a diverse ecosystem of plants, insects, reptiles, and wildlife.



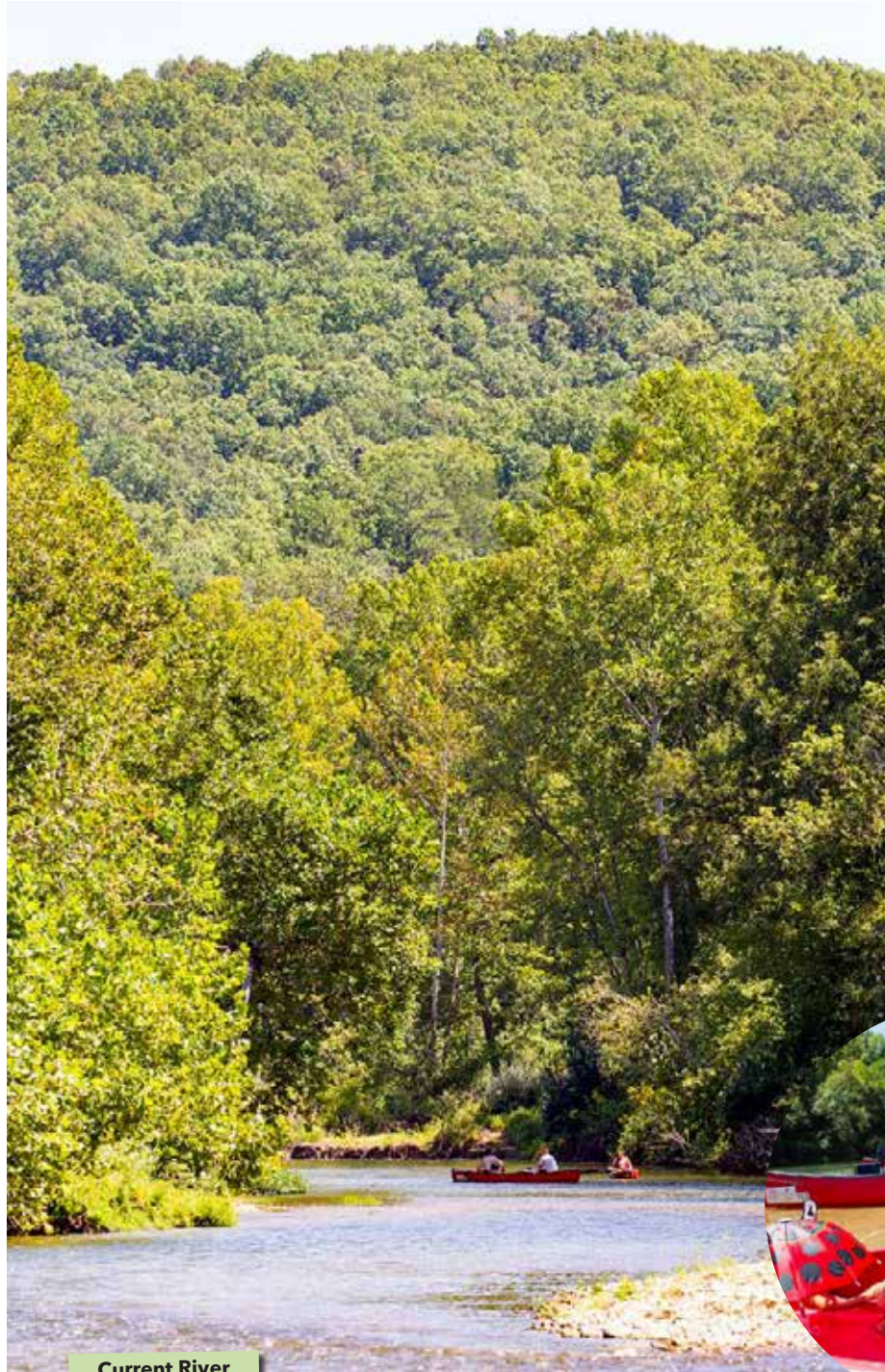
Fame flower on chert glade

Meramec to the Current

Schoolcraft's route heads south on Highway 19 and across the Meramec River. He made frequent mentions of elk between the Meramec and Current Rivers. Today, elk are found in the MDC Elk Restoration Zone in Shannon, Reynolds, and Carter counties. Good places to see elk are the 23,049-acre Peck Ranch Conservation Area and the 29,331-acre Current River Conservation Area. Both MDC areas are near Ellington and stretch into Shannon, Reynolds, and Carter counties. Take the self-guided elk driving tour at Peck Ranch or hike the Ozark Trail near Peck Ranch's headquarters in early October and listen for a bull elk's bugling. In winter, look for elk feeding in food plots along Peck Ranch's main valley road.



Schoolcraft left the Salem Plateau's prairies and open woodlands and entered the Current River valley, noting "the waters of this stream are very clear and pure, and ducks are common upon it. The wild turkey and squirrel are also seen on its banks." (Nov. 11, 1818) People can still find many outdoor activities in Current River country. Hunting, fishing, camping, and hiking are popular. Seeing the river from a canoe or kayak is preferred by many. Several agencies manage parts of this area for public recreation. The National Park Service manages the Ozark National Scenic Riverways, which covers 134 miles of the Current and Jacks Fork rivers. The Missouri Department of Natural Resources manages Montauk State Park at the headwaters of the Current River and near where Schoolcraft crossed the Current.



Current River

Paddling sports have gained in popularity in recent years and still remain one of the best ways to experience nature.

From Current River to the North Fork of the White

Schoolcraft's general route continues south from Salem on Missouri Highway 32 toward Licking, then south on Missouri Highway 137. At Raymondville, turn west on Texas County Highway B toward Houston. West of U.S. Highway 63, this route passes by a gem of Missouri's natural area system — the Piney River Narrows Natural Area in Texas County. This 50-acre area is highlighted by large dolomite outcroppings.

Schoolcraft saw black bears several times on his journey. By the end of the century, bears were almost extirpated from the state. Fast forward to 2018 and Missouri's black bear population is recovering. MDC biologists attribute this increase primarily to a resurgence of large forested habitats in the Missouri Ozarks. On Nov. 17, 1818, a few miles north of present-day Cabool, Schoolcraft and Pettibone had a memorable bear encounter.

"We had not travelled far when we discovered, in a ravine below, four bears upon trees. We have not heretofore sought to go out of our way for the purpose of hunting, but this was directly in our course, and too fine an opportunity to exercise our skill in hunter sport to be neglected. We determined to give them battle." (Schoolcraft, Nov. 17, 1818)

Schoolcraft and Pettibone approached cautiously, but the bears saw them and began to descend the trees and flee. Schoolcraft fired his gun when the last bear reached the ground, but this had no effect on the animal, which scampered away. The lost opportunity of much-needed meat was compounded by a badly sprained ankle that Pettibone suffered. However, the two traveled 18 miles the next day, with Pettibone riding atop the packhorse and supplies.



Piney River Narrows Natural Area



Black bear



Schoolcraft and Pettibone had several encounters with black bears along Little Piney Creek in Texas County, near present day Houston.



Down the North Fork of the White

Schoolcraft and Pettibone spent 13 days winding down the North Fork of the White. While visiting one of the river's many springs, Schoolcraft wrote, "the waters possessing the purity of crystal. I set my gun against a tree, and unbuckled my belt, preparatory to a drink, and in taking a few steps toward the brink of the spring, discovered an elk's horn of most astonishing size, which I afterwards hung upon a limb of a contiguous oak, to advertise (to) the future traveler that he had been preceded by human footsteps in his visit to the Elkhorn spring." (Nov. 20, 1818)

The North Fork flows through some of the most scenic and rugged country in Missouri, as well as 22,000 acres of Norfork Lake known for its walleye and bass fishing. Cold, clear spring water that emerges along the river's course makes the North Fork one of the nation's premier trout streams. Today, Schoolcraft would want to pack fishing gear to use at MDC's designated Blue Ribbon and Red Ribbon trout fishing zones of the river. The Blue Ribbon Zone begins at the upper outlet of Rainbow Springs and extends downstream 8.6 miles to Patrick Bridge. For fishing regulations, visit huntfish.mdc.mo.gov/fishing.

Schoolcraft's route narrowly missed a spot popular with today's hikers and campers — the Devil's Backbone Wilderness Area. This 6,687-acre U.S. Forest Service area in Ozark County is named for a long narrow ridge bordering the North Fork River and contains 13 miles of moderate hiking trails. Learn more about this area at fs.fed.us.

Anglers will find some of the best trout fishing in the United States in the cold clear water of the North Fork River.

Brown Trout



Finding Lead, Heading Home

Southern Missouri wasn't totally devoid of white settlement, a fact evidenced by Schoolcraft and Pettibone. Local settlers William Holt and James Fisher guided them on the western part of their journey to what today is the commercially operated Smallin Civil War Cave in Christian County near Ozark. It's easy to see Schoolcraft's mouth agape as he tried to describe the cave's 55-foot tall, 100-foot wide entrance.

"The first appearance of this stupendous cavern struck us with astonishment, succeeded by curiosity to explore its hidden recesses ... the number and variety of curious and interesting objects it presents is well worth a day's attention. To explore it, a boat would be necessary ... " (Jan. 1, 1819)

Two centuries have not changed the awe Smallin Cave creates amongst its visitors.

"It is truly an amazing sight," said Jackie Hawks, one of Smallin Cave's guides. "When I take visitors to the cave, several of Schoolcraft's quotes come to mind. People today are just as amazed as Schoolcraft was 200 years ago."

Smallin owners Kevin and Wanetta Bright have embraced the site's connection to Schoolcraft through signage and interpretive tours given at the cave. Special events are planned throughout the site in 2018–2019 to commemorate the bicentennial of Schoolcraft's visit.

"Schoolcraft's journey through the Ozarks is important for several reasons," said Kevin Bright. "He walked on this property, through this valley, and into this cave. Schoolcraft shared the beauty of the Ozarks, the geology, the geography and the people — including the Osage — with the rest of the United States. With Schoolcraft's account, when our guests and school groups visit the site, we can describe and interpret the land as he saw it and compare it to what is here today."

A must-read for those interested in retracing Schoolcraft's trek is *Rude Pursuits and Rugged Peaks: Schoolcraft's Ozark Journal 1818-1819* (University of Arkansas Press, 1996) by deceased Missouri State University history professor Milton D. Rafferty. This book matches 19th century journal entries with 21st century locations and creates a route that beckons the outdoor adventurer. To explore an interactive map of Schoolcraft's route, visit https://gis.bransonmo.gov/schoolcraft_3 prepared by Curtis Copeland, Geographic Information Systems Coordinator for the City of Branson, Missouri.





Smallin Cave

With Holt and Fisher's guidance, Schoolcraft reached his objective Jan. 2–4, 1819, when the party found lead ore at the juncture of Pearson Creek and the James River, a site just outside of modern Springfield's eastern city limits in Greene County. The value of his journal is again driven home in his description of the area that is today south Springfield.

"The prairies, which commence at the distance of a mile west of this river, are the most extensive, rich and beautiful of any which I have ever seen west of the Mississippi River. They are covered by a coarse wild grass which attains so great a height that it completely hides a man on horseback in riding through it. The deer and elk abound in this quarter and the buffalo is occasionally seen in droves upon the prairie ..."
(Jan. 4, 1819)

Today, this landscape is filled with businesses, schools, and urban residences. Therein lies the value of Schoolcraft's journal.

"Habitat management requires some type of baseline management," said Rudy Martinez, Springfield Conservation Nature Center manager. "Having historic records of the native habitat that includes descriptions of plant and wildlife diversity helps land managers identify the historic range of natural viability. Information from Schoolcraft's journal was — and still is — used to identify the historic range of natural communities found in the Ozarks."

From this point, Schoolcraft returned along an easterly route that took him through northern Arkansas, back up into southeast Missouri and eventually home to Mine à Breton in eastern Missouri.

The publication of his journal two years later led to federal government work for Schoolcraft, but in historical hindsight, the publication's true worth is how it benefited the subject, not the author.

"Schoolcraft's journal is a marker in time, a milepost in not only our state's historical journey, but in the historical timeline of the United States," Kevin Bright said. "When the Louisiana Purchase was added in 1803, the Ozarks was unexplored and unknown. Schoolcraft's journal began the story for this part of Missouri." ▲

Brian Flowers is a regional supervisor. He loves history and teaching conservation through historic and primitive skills. He and his wife, JoAnne, can often be found exploring Missouri's outdoor places.

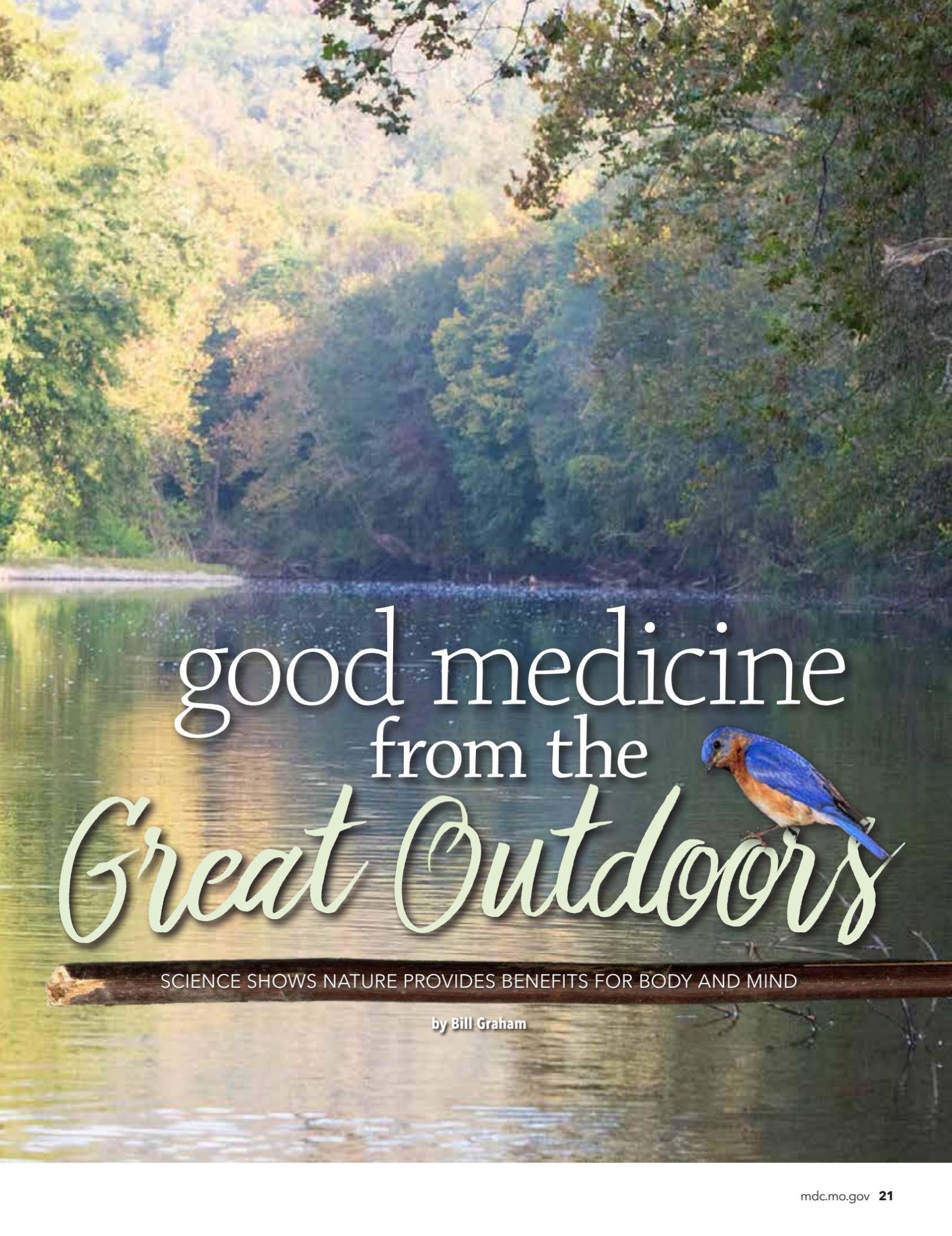
Francis Skalicky has been the media specialist for MDC's Southwest Region since Jan. 1, 1996. He lives in Springfield and tries to enjoy the outdoors with his family as often as possible.

DAVID STONNER



Smallmouth bass
fishing on the
Gasconade River

PHOTOGRAPH BY
NOPPADOL PAOTHONG



good medicine
from the
Great Outdoors



SCIENCE SHOWS NATURE PROVIDES BENEFITS FOR BODY AND MIND

by Bill Graham



Northern cardinals

Going outdoors for fun is reason enough to enjoy nature. Just ask an angler landing a big bass or a hiker smitten by a crimson-feathered cardinal perched on a green pine tree bough. Science, however, is adding one more big reason for contact with nature — better health.

Even a light dose of nature helps, says Anand Chockalingam, a cardiologist at University of Missouri Health Care in Columbia.

“Nature is for human beings like water is for plants,” Chockalingam says.

The heart doctor enjoys hiking in Missouri’s parks and forests. He recognizes the restive feeling of well-being that settles in his mind as he walks among the sights, sounds, and smells of nature. But he’s also seen positive health results when his patients recovering from heart disease or surgery head outdoors. Mind and body are intertwined, and nature and the outdoors can nurture both.

“We need to relax and refresh the mind,” Chockalingam said. Having fun outdoors provides physical exercise that

helps the body. But also, “you feel more alive, more confident. Physically, we may be exhausted, but mentally we feel more rejuvenated, more alive.”

What’s Old is New Again

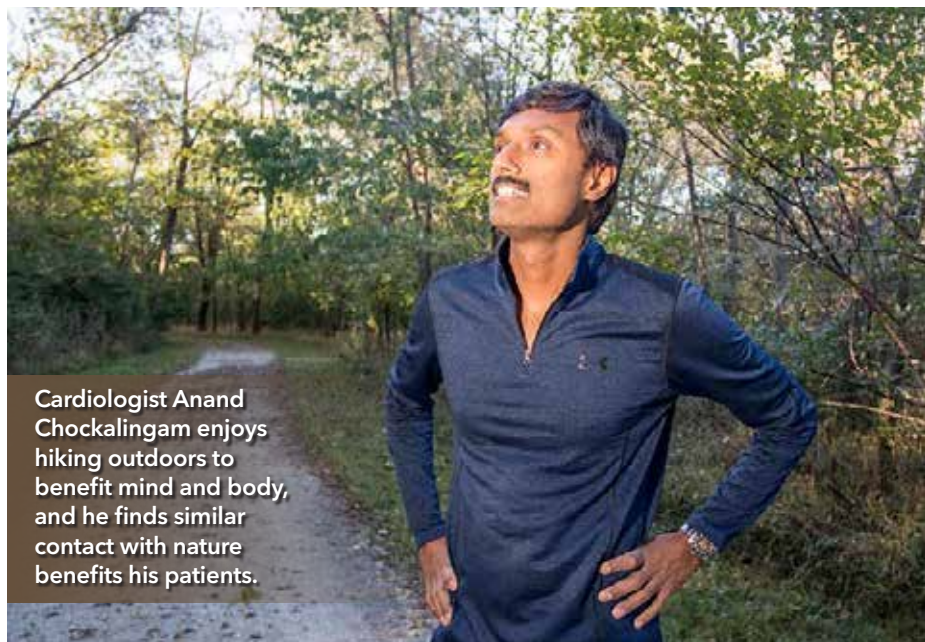
Saying nature is good for the body and soul is not new.

“To the sick, the doctors wisely recommend a change of air and scenery,” nature essayist Henry David Thoreau wrote in *Walden*, published in 1854. Then he made the point that experiencing nature close to home is as viable as traveling the globe.

“Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul alike,” conservation giant John Muir wrote in *The Yosemite*, published in 1912.

It’s doubtful a Missouri turkey hunter who has experienced the pulse-quickening, surround-sound chirps, clucks, and gobbles of birds bringing late-April woods to life at first light would disagree. Missourians have long appreciated their rivers, lakes, fields, and forests.

Modern science, though, is beginning to measure more precisely beneficial relationships between people and nature.



Cardiologist Anand Chockalingam enjoys hiking outdoors to benefit mind and body, and he finds similar contact with nature benefits his patients.

Science is Catching Up

Exposure to greenspace “reduces the risk of type II diabetes, cardiovascular disease, premature death, preterm birth, stress, and high blood pressure,” according to a study published in 2018 by researchers at the University of East Anglia in England. The researchers wanted to know if nature really provides a health boost. They reviewed 140 studies involving 290 million people from 20 countries and concluded that people with more contact with nature are healthier.

“We found that spending time in, or living close to, natural green spaces is associated with diverse and significant health benefits,” the authors said of the study published in *Environmental Research*, a science journal.

In one example, the studies noted lower levels of salivary cortisol, a hormone associated with stress secreted by adrenal glands, in people exposed to nature. That has implications for healthier memory, blood pressure, heart rate, and other important functions.

How natural settings affect the senses influences the mind, which interacts with the human body’s complex hormonal, muscular, and nervous systems.

Human beings
spent millions of
years living closely
with nature. Only
relatively recently
have people
so thoroughly
separated
themselves from
steady contact
with trees, plants,
soil, animals, and
open sky.



When we connect children with the outdoors, nature nurtures their imaginations and sense of wonder.



Greer Spring near the Eleven Point River

Returning to our Roots

A return to nature is a return to essential forces that shaped our species. Even the chemicals encountered in nature may be a health boost. Research in Japan suggests that organic compounds released by trees into the air, called phytoncides, have antibacterial properties that are health boosting.

Prehistoric humans sought food and shelter outdoors with their senses alert. Their digital-age descendants find comfort in natural places that offer deeper dimensions than electronic devices.

Morel mushroom hunters tramping in the woods may decide to rest by sitting on a fallen log. The pause gives them time to note waxy mayapple leaves, shaggy bark on a hickory tree, bluish lichens covering stones, emerald-toned moss on a log, or the earthy smell of unseen fungi and bacteria turning last year's fallen leaves into soil nutrients. The mushroom hunters may not realize it, but they are also participating in a growing health pursuit — forest bathing.

Research has found health benefits from forest bathing, called *shinrin-yoku* in Japan, where the practice was developed. Essentially, a person opens all senses, including touch, smell, sight, sound, and hearing, to the forest around them. Researchers say the resulting relaxed physiological relaxation can induce results such as healthier pulse,

fewer negative stress hormones, decreased blood pressure, and improved immune systems.

Mixing the word bathing with forest is misleading. Any cleansing has to do with reducing stress and worry. Practitioners are not unmindful of forest challenges such as ticks and chiggers. But they are mindful of what is beautiful, interesting, or a change of pace from the normal surroundings where worries about work, family, or the world predominate.

"I prefer to call it forest therapy," said Mike Beezhold, a natural resource

Morel mushroom hunters



DAVID STONNER



Flowering
dogwood

and water management professional. Beezhold recently completed training to become certified as a guide by the Association of Nature and Forest Therapy Guides and Programs. He takes individuals or groups afield in the Kansas City area.

"It is all about being fully immersed in nature, to be present in nature, and be fully aware of your five senses, what's going on in nature, and you as a part of nature," Beezhold said.

Traditional outdoor pursuits such as fishing, hunting, and birding can offer the same benefits. Yet, so can a simple walk in the woods, a pause on a park bench, or morning observations made from back porch steps with a cup of coffee in hand. Such pursuits are tonic in a fast-moving technology age.

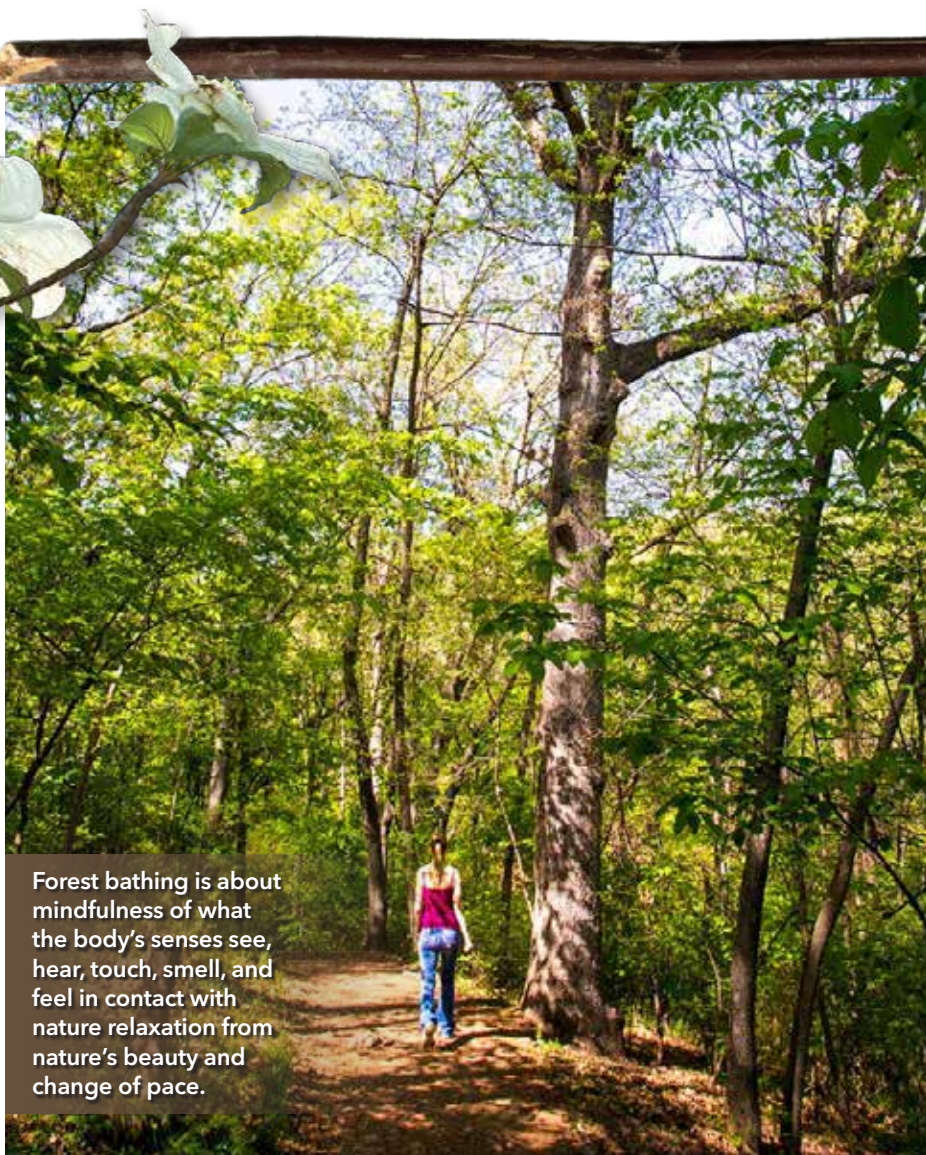
"It's definitely hard for many people to go outside and simply slow down and go almost at a snail's pace," Beezhold said.

Last Child

Noted author Richard Louv, a Missourian in his boyhood, blazed a trail in the field of how nature benefits health with his 2005 best-selling book, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. The book touched a nerve in a world where cell phones, computer games, and television have separated children's brains and bodies from rhythms and gentle influences found outdoors. Nature can stimulate a child's creativity, boost confidence, and calm emotions, Louv asserts.

In *Last Child's* early chapters, he wrote about climbing trees and exploring overgrown fields as a youth in the Kansas City area: "The woods were my Ritalin. Nature calmed me, focused me, and yet excited my senses."

Last Child and Louv's follow-up books about nature's health benefits for adults and families tap a growing body



Forest bathing is about mindfulness of what the body's senses see, hear, touch, smell, and feel in contact with nature relaxation from nature's beauty and change of pace.





MDC provides grants and expertise to help Missouri schools establish outdoor classrooms that connect students with nature.

of science-based studies that link the outdoors to good health. His nonprofit foundation compiles links to scientific papers for the public to review.

“When I wrote *Last Child in the Woods*, I cited about 60 studies,” Louv said. “Today, the Children & Nature Network website has compiled a large body of studies, reports, and publications that are available for viewing or downloading — over 700 of them, with about 20 a month coming into us from around the world.”

Scientists studying health benefits from nature have measured the human body, brain, and behaviors. They’ve found nature boosts the ability of children and adults to learn.

“The studies strongly suggest that time in nature can help many children learn to build confidence in themselves, reduce the symptoms of attention deficit hyperactivity disorder, calm them, and



help them focus,” Louv said. “Schools with natural play spaces and nature learning areas appear to help children do better academically. There are some indications that natural play spaces can reduce bullying. Nature experience can also be a buffer to child obesity. Time spent in nature is obviously not a cure-all, but it can be an enormous help, especially for kids and adults who are stressed by circumstances beyond their control.”

Getting children out in nature also helps grow conservation values, now and for the future.

“It’s hard to truly value nature unless you learn to love it in person,” Louv said.



MDC offers natural play areas for children at some nature centers. Children can climb on logs stacked in designs or on boulders. They explore and test their creativity by building hideaways with sticks or small tree limbs left on-site. The play areas are nestled among shady trees, native shrubs, and wildflowers. Though designed for children, it is quite common to see parents playfully walking atop the logs and boulders, too.

Even a mere glimpse of nature can boost spirits. A study published in 1984 found that gall bladder surgery patients

placed in a hospital room with a view of greenery recovered faster and with fewer complications than those without a natural view. Even a green plant in a room is a brightener for the human mind.

An angler wading in a cold-water, fast-flowing stream, arms whipping a fly rod and line to lure a rainbow trout gets physical exercise that is healthy. Perhaps, too, the angler lands a fish that becomes a healthy meal. Many anglers also find such pursuits a deeply emotional, even spiritual experience.

Rare is the doctor who advises a patient to “catch four trout and call me in the morning.” But quite common is the doctor or minister who fishes for their own benefit.

Nature is now scientifically proven as useful medicine — preventative or remedy.

Going outdoors, Chockalingam says, “is a very intelligent way of taking care of ourselves.” ▲

Bill Graham is MDC’s Kansas City Region media specialist. He’s a lifelong hunter, angler, and camper who enjoys hiking and photography in Missouri’s best wild places.



*Tiger swallowtail
perches on glade
coneflower*



TIGER SWALLOWTAIL: DONNA
BRUNET; GIRL: DAVID STONNER

Get Outside

in FEBRUARY

→ Ways to connect with nature



NORTHERN CARDINAL



Catch a Rainbow

It's never too cold to go fishing in the Show-Me State! MDC annually stocks **rainbow trout** in lakes across the state. Grab your pole and catch a rainbow. For more information, visit short.mdc.mo.gov/Zps.

Sounds of Spring

Nature is starting to awaken from its winter slumber. Take a walk and listen for the sounds around you. Northern cardinals sing on sunny days. Chorus frogs are also calling. Their calls sound like a thumbnail scratched along a comb. What sounds do you hear?



Illinois chorus frog



Western chorus frog

SOUTHWEST REGION

Firearms Basic Care and Cleaning

Saturday, Feb. 16 • 8:30-11:30 a.m.

Andy Dalton Shooting Range, 4897 N. Farm Road 61, Ash Grove, MO 65604

Registration required by Feb. 16. Call 888-283-0364 or visit short.mdc.mo.gov/Zp8.

All ages

Join us to learn the basics of caring for and cleaning your firearms. This program will include tips and techniques for all aspects of maintaining your firearms. You may bring your own unloaded firearm to class or use ours.

Don't Get Burned

Fire season begins and continues through the greening of spring.

Beware — if there is no snow on the ground, burning is not advised.

Natural Events to See This Month

Here's what's going on in the natural world.



Coyotes are breeding — listen for their howl



Geese migrate through Missouri



Boxelder bugs emerge on warm days

Find more events in your area at mdc.mo.gov/events

Birds of a Feather

Cedar waxwings

flock to cedar trees to feast on berries. They prefer any fruiting or flowering tree or shrub, so look for them in backyards, parks, or other wooded areas.



ST. LOUIS REGION

Winter Hike in the Woods



Saturday, Feb. 23 • 1-3:30 p.m.
Rockwoods Reservation
2751 Glencoe Road
Wildwood, MO 63038
Registration required by Feb. 23.
Call 888-283-0364
All ages

Cure that cabin fever by joining us on a late winter hike at Rockwoods Reservation. We'll hike the 3.2-mile Lime Kiln Loop for unique winter views into the continually changing forest and to catch glimpses of winter wildlife and early signs of spring. Effort = moderate to strenuous. Natural surface hiking with a couple of short, steep hills.

Renew your HUNTING *and* FISHING PERMITS TODAY



Annual permits expire at the end of February.

Buy Missouri hunting and fishing permits from vendors around the state, online at mdc.mo.gov/buypermits, or through MDC's free mobile apps, MO Hunting and MO Fishing.



Serving nature and you®

Places to Go

NORTHWEST REGION

Riverbreaks Conservation Area

Loess hills offer river valley views
by Larry Archer

✧ Before spring and its accompanying foliage arrives, visitors have one last chance — at least for another year — to see something pretty impressive from the bluffs of Riverbreaks Conservation Area (CA) in northwest Missouri.

“It’s got great views, especially in the wintertime when the leaves are off,” said Lonnie Messbarger, resource forester and Riverbreaks CA manager. “We’ve got several trails, service roads that act as trails, so folks can have easy access for hunting, or just to go look out over the Missouri River floodplain, because you can see into Kansas and Nebraska on the right day.”

Located in Holt County, the 2,307-acre area offers roughly equal parts oak and hickory hardwood forests and open areas, including grasslands, crop fields, and remnant prairie. Its shooting range, multi-use trails (open to both equestrians and bicyclists), and several stocked fishing ponds make it a day trip destination, while its proximity to Loess Bluffs National Wildlife Refuge also makes it a great addition to a longer, outdoor venture.

In February, opportunities abound for birders looking for winter migrants.

“Bald eagles are pretty common because of the steepness of the land, and they get a good view of everything,” Messbarger said.



“All those loess hills are a pretty abrupt change from the Missouri River floodplain, which is really flat, and it just jumps straight up into the loess hills.”

—Riverbreaks CA Manager
Lonnie Messbarger

DAVID STONNER



RIVERBREAKS CONSERVATION AREA

consists of two tracts totaling 2,306 acres in Holt County. To the east tract, take Highway 59 east from Oregon, then take Route O south 3.25 miles to the highway sign. To the west tract, take the same route as above, but continue south on Route O, and then take Route T 1.5 miles to the area.

N39° 56' 22.56" | W95° 07' 29.28"

short.mdc.mo.gov/ZcF 816-271-3100

WHAT TO DO WHEN YOU VISIT



Bird-Watching The eBird list of birds recorded at Riverbreaks CA is available at short.mdc.mo.gov/Zpe.



Camping Primitive camping (no facilities provided) is allowed adjacent to designated parking lots.



Fishing Black bass, catfish, crappie, sunfish



Hunting Deer and turkey
Deer and turkey regulations are subject to annual changes. Please refer to the *Spring Turkey* or *Fall Deer and Turkey* booklets for current regulations.

Also **quail, rabbit, and squirrel**



Shooting Range Firearms range with 25-, 50-, and 100-yard targets.



Trails More than 13 miles of hiking trails, as well as nearly 4 miles of multi-use (biking, equestrian, and hiking) trails.



Trapping Special-use permit required.

WHAT TO LOOK FOR WHEN YOU VISIT



Groundhog



Bald eagle



Bobcat



Red-bellied
woodpecker



Grotto Salamander

Eurycea spelaea

Status

Species of Conservation Concern

Size

3–4¾ inches

Distribution

Wet caves of Missouri's Ozark Plateau



Did You Know?

This is the only species of blind salamander in Missouri. Adults are true troglobites, meaning they live in total darkness and require caves with a spring or stream for survival.

The smooth gracefulness of these vulnerable pink salamanders reminds us of the overall delicacy of their cave ecosystem. The survival of the grotto salamander requires healthy caves, which requires clean groundwater and lack of disturbance by humans. It is important to respect caves, their inhabitants, and the archaeological artifacts they contain. “Walk softly and leave no trace.”



LIFE CYCLE

Grotto salamanders breed during the winter and early spring. Fertilization occurs internally, and the eggs are attached to stones in or near water in caves. The larvae are aquatic and inhabit cave streams, springs, or streams that flow out of caves or grottoes. Larvae may take 2–3 years to transform into adults.



FOODS

Adults eat small insects that feed on bat guano, so you're likely to find grotto salamanders in caves with high bat populations. Larvae eat tiny freshwater crustaceans and other small aquatic invertebrates.



ECOSYSTEM CONNECTIONS

Grotto salamanders are considered predators to insects and other small prey in the cave ecosystem. However, they and their larvae serve as prey to larger creatures, such as mammals venturing into caverns. Even after they die, grotto salamanders serve as nutrients for future cave life.

JIM RATHER

Outdoor Calendar

✱ MISSOURI DEPARTMENT OF CONSERVATION ✱



Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:
May 26, 2018–Feb. 28, 2019

Paddlefish

Statewide:
March 15–April 30, 2019

On the Mississippi River:
March 15–May 15, 2019
Sept. 15–Dec. 15, 2019

Trout Parks

Catch-and-Release:
Nov. 9, 2018–Feb. 11, 2019

TRAPPING

Beaver, Nutria

Nov. 15, 2018–March 31, 2019

Otters, Muskrats

Nov. 15, 2018–Feb. 20, 2019

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.

HUNTING

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2018–March 3, 2019

Deer

Archery:

Sept. 15–Nov. 15, 2019
Nov. 27, 2019–Jan. 15, 2020

Firearms:

- ▶ Early Youth Portion (ages 6–15):
Nov. 2–3, 2019
- ▶ November Portion:
Nov. 16–26, 2019
- ▶ Late Youth Portion (ages 6–15):
Nov. 29–Dec. 1, 2019
- ▶ Antlerless Portion (open areas only):
Dec. 6–8, 2019
- ▶ Alternative Methods Portion:
Dec. 28, 2019–Jan. 7, 2020

Rabbit

Oct. 1, 2018–Feb. 15, 2019

Squirrel

May 26, 2018–Feb. 15, 2019

Turkey

Archery:

Sept. 15–Nov. 15, 2019
Nov. 27, 2019–Jan. 15, 2020

Firearms:

- ▶ Youth (ages 6–15): April 6–7, 2019
- ▶ Spring: April 15–May 5, 2019
- ▶ Fall: Oct. 1–31, 2019

Waterfowl

See the Waterfowl Hunting Digest or visit short.mdc.mo.gov/ZZx for more information.



ILLUSTRATION: MARK RATHIEL



**Follow us
on Instagram**

@moconservation

Don't let the frigid temperatures keep you from enjoying nature. This young bull elk got his herd moving at Peck Ranch Conservation Area, despite sub-zero temperatures. Gather your herd and head out. Who knows what you'll discover?

📷 by **David Stonner**

Subscribe online | mdc.mo.gov/conmag | Free to Missouri households